PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Artcle 36 and Rule 70)

Applicant's or agent's file reference	FOR FURTHER ACTION	See Form PCT/IPEA/416

International application No. **PCT/KR2004/000621**	International filing date*(day/month/year)* **22 MARCH 2004 (22.03.2004)**	Priority date *(day/month/year)* 22 MARCH 2003 (22.03.2003)

International Patent Classification (IPC) or national classification and IPC

IPC7 H04L 9/00

Applicant

Lee, You-Young

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of _____3_____ sheets, including this cover sheet.

3. This report is also accompanied by ANNEXES, comprising:

    a. ☒ (sent to the applicant and to the International Bureau) a total of _____3_____ sheets, as follows:

    ☒ sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).

    ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.

    b. ☐ *(sent to the International Bureau only)* a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

    ☒ Box No. I   Basis of the report

    ☐ Box No. II   Priority

    ☐ Box No. III   Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

    ☐ Box No. IV   Lack of unity of invention

    ☒ Box No. V   Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

    ☐ Box No. VI   Certain documents cited

    ☐ Box No. VII   Certain defects in the international application

    ☐ Box No. VIII   Certain observations on the international application

Date of submission of the demamd **21 JANUARY 2005 (21.01.2005)**	Date of completion of this report 18 APRIL 2005 (18.04.2005)

Name and mailing address of the IPEA/KR Korean Intellectual Property Office 920 Dunsan-dong, Seo-gu, Daejeon 302-701, Republic of Korea Facsimile No. 82-42-472-7140	Authorized officer JEONG, Jae Woo Telephone No. 82-42-481-5718

Box No. I   Basis of the report

1. With regard to the **language,** this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

    ☒ This report is based on translations from the original language into the following language ___English___ , which is the language of a translation furnished for the purposes of:

    ☐ international search (under Rules 12.3 and 23.1(b))

    ☒ publication of the international application (under Rule 12.4)

    ☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the **elements** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this reort as "originally filed" and are not annexed to this report):*

    ☐ the international application as originally filed/furnished

    ☒ the description:

    pages ___1 - 4. 6 - 12___ as originally filed/furnished
    pages* ___5___ received by this Authority on ___21 Jan. 2005___
    pages* _____ received by this Authority on _____

    ☒ the claims:

    pages ___15___ as originally filed/furnished
    pages* _____ as amended (together with any statment) under Article 19
    pages* ___13 - 14___ received by this Authority on ___21 Jan. 2005___
    pages* _____ received by this Authority on _____

    ☐ the drawings:

    pages _____ as originally filed/furnished
    pages* _____ received by this Authority on _____
    pages* _____ received by this Authority on _____

    ☐ the sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

    ☐ the description, pages _____
    ☐ the claims, Nos. _____
    ☐ the drawings, sheets _____
    ☐ the sequence listing *(specify)* : _____
    ☐ any table(s) related to sequence listing *(specify)* : _____

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

    ☐ the description, pages _____
    ☐ the claims, Nos. _____
    ☐ the drawings, sheets _____
    ☐ the sequence listing *(specify):* _____
    ☐ any table(s) related to sequence listing *(specify)* : _____

* *If item 4 applies, some or all of those sheets may be marked "superseded."*

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1 - 5	YES
	Claims		NO
Inventive step (IS)	Claims	1 - 5	YES
	Claims		NO
Industrial applicability (IA)	Claims	1 - 5	YES
	Claims		NO

2. Citations and explanations (Rule 70.7)

D1 : US 20020091937
D2 : US 4731841

The claimed inventions disclose a system and method for data transmission of N-dimensional information, wherein the basic information unit File_f comprises a top layer information(T_f information), a middle layer information(M_f.n information), and a bottom layer information(B-f information), and the M_f.n information is N-dimensional structured information.

D1 discloses a method of authentication using biometric attributes and D2 discloses a method of authentication using challenge-response method.

The claimed inventions are different from D1, by reason that the claimed inventions execute authentication by producing information of N-dimensional structure using biometric attributes, while D1 executes authentication by simply judging whether the biometric attribute coincides or not.

The claimed inventions are also different from D2, by reason that the claimed inventions discloses encryption by extracting some N dimensional information and using it as a variable, while D2 discloses a general challenge response method.

Therefore, claims 1-5 of the present invention fulfill the requirement of novelty criterion of PCT Article 33(2) and the requirement of inventive step under PCT Article 33(3).

a biometric terminal. To structure the T_f information, a user may use biometric information obtained through the biometric terminal or if the user does not own the biometric terminal, the user may combine key codes on the keyboard or keypad.

5   The M_f.n information is middle layer information between the top layer information (T_f information) and the bottom layer information (B_f information). The M_f.n information functions as variable information to apply N-dimensional information – based encryption algorithm to the data to be transmitted/received between clients and between the client and the server over a wired/wireless communication network. The M_f.n includes 'n' middle layer information from M_f.1 to M_f.n

10   (wherein 'n' is a positive integer). The M_f.1 is bottom layer information related to the T_f, and M_f.n-1 is upper layer information of the M_f.n information (wherein, n≥2).

The B_f information is bottom layer information out of the N-dimensional basic information unit, FILE_f information. Also, the B_f information is the lower layer

15   information related to the M_f.n information. The B_f information can be composed of authentication information that a client registers to the database(DB) of a Server System. For example, a picture the user painted, the user's autograph, every kind of biometric information about the user, and combined information using random key values on the keyboard/keypad can be used as the B_f information.

20   To be short, the N-dimensional basic information unit, namely the FILE_f information, includes the T_f information (the top layer information), the M_f.n information (the lower layer information related to the T_f information), and the B_f information (the lower layer information related to the M_f.n information).

Fig. 2 illustrates a set of the N-dimensional information, including a plurality of

25   N basic information units(for example, the number of the N basic information units can be f). The N-dimensional information is stored in a portable storage device or storage in general.

AMENDED SHEET (ART. 34)

CLAIMS

5   **What Is Claimed Is:**

1.   A data transmission system using N-dimensional information, wherein the N-dimensional information comprises:

basic information unit File_f information comprised of at least two layer
10   information combination among a top layer information T_f information, a middle layer information M_f.n information related to the T_f information, and a bottom layer information B_f information related to the T_f information or the M_f.n information;

a data structure of the N-dimensional information comprised of the File_f information; and

15   a storage for storing the data structure of the N-dimensional information.

2. (Amended)The data transmission system according to claim 1, wherein the top layer information T_f information is composed of information that is created by a
20   keyboard/keypad or biometric terminals comprised in a Client system and Server System, respectively, and accessed through code information generated by the keyboard/keypad input or through biometric information of the client acquired from the biometric terminals;

wherein the middle layer information M_f.n information is composed of n-
25   dimensionally related middle layer information from M_f.1 information to M_f.n

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information, the M_f.1 information being lower layer information related to the top layer information T_f. information and the M_f.n information being upper layer information of B_f information and M_f.n-1 information being upper layer information of the M_f.n information, and used as a variable for an encryption processing based on

5   the N-dimensional information; and

wherein the B_f information is composed of authentication information the client registers to the DB of the Server System.

10 3.   A data transmitting methods using N-dimensional information, wherein an authentication processing of Server System comprises the steps of:

randomly extracting N-dimensional T_f information to create combined information and transmitting the combined information to Client System;

searching lower layer information M_f.n combined information related to the

15 transmitted T_f combined information;

applying to the authentication information registered by a client an encryption processing using the searched M_f.n combined information as a variable to create encrypted information; and

if the encrypted information corresponds with the authentication information

20 from the client , authenticating the client.

4.   A data transmitting methods using N-dimensional information, wherein an authentication processing of Client System comprises the steps of:

25 receiving N-dimensional T_f combined information from Server System;

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